We claim:

1. An immunogenic composition, comprising:

a DNA immunogen; and

a chemokine or a polynucleotide encoding a chemokine.

2. The immunogenic composition of claim 1 wherein the DNA immunogen comprises a polynucleotide encoding a viral immunogen.

3. The immunogenic composition of claim 2 wherein the polynucleotide encodes a hepatitis C virus non-structural polypeptide.

4. The immunogenic composition of claim 3 wherein the hepatitis C virus non-structural polypeptide is selected from the group consisting of NS3, NS4, NS5a, and NS5b.

5. The immunogenic composition of claim 2 wherein the polynucleotide encodes an HIV polypeptide.

6. The immunogenic composition of claim 5 wherein the HIV polypeptide is a gag polypeptide.

7. The immunogenic composition of claim 1 wherein the DNA immunogen comprises a polynucleotide encoding an immunogen expressed by a tumor.

8. The immunogenic composition of claim 1 wherein the chemokine is macrophage inflammatory protein 1α (MIP-1α).

9. The immunogenic composition of claim 1 wherein the chemokine is B lymphocyte chemokine (BLC).

10. The immunogenic composition of claim 1 further comprising a pharmaceutically acceptable carrier.

11. A method of enhancing an immune response to a DNA immunogen in a mammal, comprising the step of:

administering to the mammal (i) a chemokine or a first polynucleotide encoding a chemokine and (ii) a DNA immunogen, whereby an immune response to the DNA immunogen is enhanced.

12. The method of claim 11 wherein a chemokine is administered.

13. The method of claim 12 wherein the chemokine and the DNA immunogen are co-administered.

14. The method of claim 12 wherein the chemokine is administered prior to administration of the DNA immunogen.

15. The method of claim 12 wherein the DNA immunogen is administered prior to administration of the chemokine.

16. The method of claim 11 wherein a first polynucleotide encoding the chemokine is administered.

17. The method of claim 16 wherein the first polynucleotide and the DNA immunogen are co-administered.

18. The method of claim 16 wherein the polynucleotide is administered prior to administration of the DNA immunogen.

19. The method of claim 16 wherein the DNA immunogen is administered prior to administration of the first polynucleotide.

20. The method of claim 16 wherein a second polynucleotide which comprises(a) the first polynucleotide and (b) the DNA immunogen is administered.

21. The method of claim 11 wherein the chemokine is macrophage inflammatory protein 1α (MIP-1α).

22. The method of claim 11 wherein the chemokine is B lymphocyte chemokine (BLC).

23. The method of claim 11 wherein the DNA immunogen comprises a polynucleotide which encodes a hepatitis C virus non-structural polypeptide.

24. The method of claim 23 wherein the hepatitis C virus non-structural polypeptide is selected from the group consisting of NS3, NS4, NS5a, and NS5b.

25. The method of claim 23 wherein the polynucleotide encodes an HIV polypeptide.

26. The method of claim 25 wherein the HIV polypeptide is a gag polypeptide.

27. The method of claim 11 wherein the mammal is a human.

28. The method of claim 11 wherein the immune response is an antibody response.

Sub B1

29. The method of claim 11 wherein the immune response is a cytotoxic T lymphocyte response.